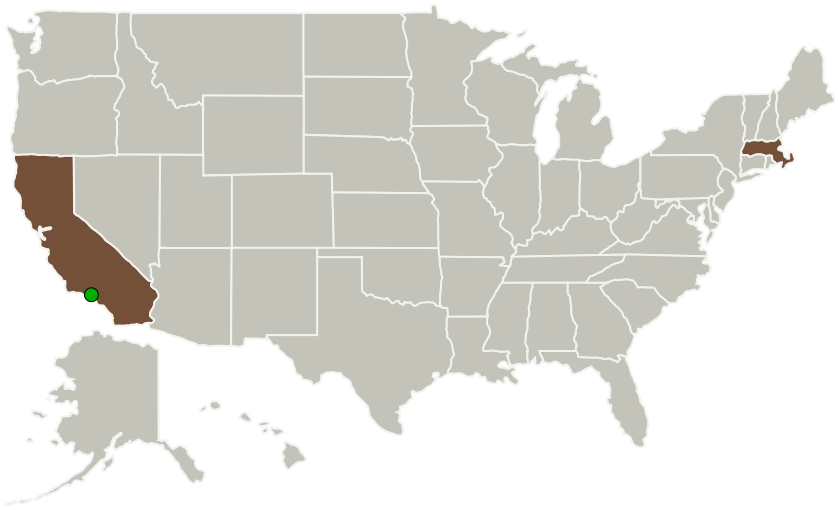
Hierarchical Orbital Observatory Deployable Shroud (HOODS), Phase I

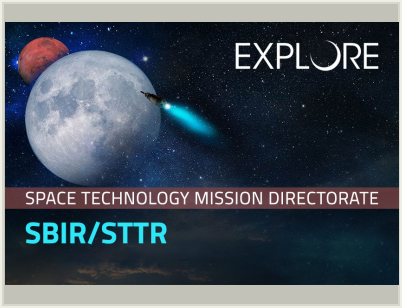
Completed Technology Project (2010 - 2010)

Project Introduction

Large deployable telescopes such as NASA's 9.2m and 16.8m segmented ATLAST systems require commensurately large deployable sunshades for thermal control and to prevent stray light from contaminating the desired science images. Existing deployable structures technologies are too heavy and expensive to provide advanced observation platforms with the supporting systems they require to function properly. Aerospace and Bonded Structures (ABS), Inc. will team with QinetiQ North America (QNA) to provide NASA with a versatile, self-deploying Optical Barrel Assembly (OBA) and shroud that can be applied to a wide range of telescope scales and configurations. The HOODS system consists of a strain energy self-deploying composite truss structure and the insulation and light baffle material that protects the sensitive optical components. The phase I program will define an OBA architecture compatible with the ATLAST overall system deployment and operational approach. The ABS team will build a representative section of deployable truss structure and test it in a laboratory environment. The test results will be used to extrapolate the full system performance. Phase II will expand on the Phase I results to develop a scaled full system HOODS system prototype.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Aerospace & Bonded Structures, LLC	Lead Organization	Industry	Billerica, Massachusetts
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	Massachusetts

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139042)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Aerospace & Bonded Structures, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

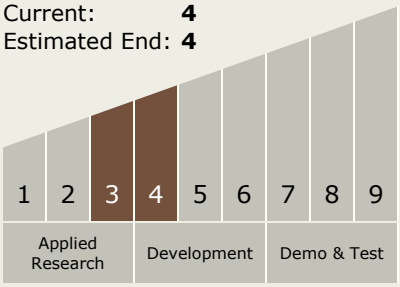
Carlos Torrez

Principal Investigator:

Michael R Winter

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.3 Mechanical Systems
    - TX12.3.1 Deployables, Docking, and Interfaces

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System